841 PUBLICATION

OXYGENATION STATUS IN PRIMARY SQUAMOUS CELL CARCINOMAS OF HEAD AND NECK

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45 patients with primary head and neck tumors were investigated pretherapeutically. In 30 patients the tumors were located at the floor of the mouth, the tongue or the tonsil. In these cases pO_2 measurements were performed in general anesthesia during endoscopic procedure. In 15 patients large neck nodes (N2/N3) were investigated pretherapeutically and during split course radiochemotherapy. In general, the median pO_2 distribution ranged between 2.4 and 46.6 mmHg and showed marked tumor to tumor heterogeneity. The follow up investigations during split course radiochemotherapy (n = 15) showed a significant increase of the median pO_2 after the pause. The observed changes of tumor oxygenation during therapy will be discussed in detail with regard to their clinical relevance.

842 PUBLICATION

HYPERTHERMIA-ENHANCED EFFECTIVENESS OF CISPLATIN IN UNTREATED VERSUS IRRADIATED RAT SOLID TUMOURS

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Hyperthermia (HT) enhances cytotoxicity of cisplatin (CDDP). If this enhancement is different in untreated versus irradiated tumours is not known. Therefore this animal study investigates the efficacy of combined CDDP and HT in untreated tumours compared to tumours regrowing after irradiation.

Pieces of R-1 rhabdomyosarcoma were subcutaneously implanted in the hind legs of Wag/Ry rats. After irradiation, the tumours regrew to their original volumes within 16 days. Chemo-hyperthermic treatment of untreated tumours or irradiated tumours at day 16 after irradiation consisted of CDDP (6 mg/kg ip), HT (1 h at 43°C) or CDDP + HT (45 min interval). The experimental endpoint was tumour growth delay (TGD). In untreated tumours CDDP + HT resulted in a significantly larger TGD than CDDP alone (11.6 and 7.4 days respectively, $p = 0.0002$), while HT alone showed a 1-day TGD. Preliminary results in irradiated tumours indicate that CDDP + HT rendered a similar TGD as in untreated tumours, although the TGD after CDDP + HT was not significantly different from CDDP alone.

Our findings show that HT enhances the effectiveness of CDDP in R-1 tumours. Untreated tumours probably respond similar to CDDP + HT as compared to irradiated tumours.

843 PUBLICATION

CONTINUOUS VS. SPLIT-COURSE IRRADIATION FOR LUNG CANCER. IMMUNOLOGICAL IMPLICATIONS

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The therapeutic irradiation for lung cancer causes profound disturbances of host's general immunocompetence, the cellular immunodepression being the dominant finding. It is thought that the split-course technique holds certain advantage over the continuous irradiation, since the former includes a period of 4 weeks between two courses, thus allowing the lymphopoeitic system to recover to a certain degree. In this report, we compared the radiotherapy-due alterations of several cellular immunity parameters (the number and function of total T cells, active T cells and the cells of monocyte/macrophage lineage), immediately after the completion of either continuously (n = 13) or split course-irradiated ($n = 12$) lung cancer patients. All patients had received the total dose of 60 Gy. Both therapeutical techniques caused alterations of the parameters tested: the significant decrease of the total and active T cells and their lymphoproliferative response, while the phagocyting activity and the number of mononuclear phagocytes were increased, the latter being affected to a lesser extent in split-course-treated patients. Our results suggest that both techniques have similar immunodepressant effect on the cellular immunity of lung cancer patients.

Soft tissue sarcomas

844 ORAL

FIRST CLINICAL EXPERIENCE WITH A GROWING ENDOPROSTHESIS, A LIMB SAVING PROCEDURE IN CHILDREN (FILM—10 MIN)

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Purpose of the study: To perform the first clinical study with an extendable endoprosthesis that can be extended non-invasively for children with a malignant bone tumor in the leg.

Method: A 14-year old boy had an osteosarcoma at the distal metaphysis of the femur. The patient was first treated successfully by chemotherapy (cisplatin, doxorubicin, ifosfamide and high dose methotrexate). The operation followed a few weeks after chemotherapy courses. Enough muscle tissue could be preserved. Resection was followed by reconstruction with a new extendable modular endoprosthetic system. The growing endoprosthesis is powered magnetically. An electromagnet, rotating outside the leg, produces a magnetic field that causes rotation of a small permanent magnet in the prosthesis. The magnet drives a motion screw via a gearbox. When the motion screw rotates the inner and outer tube of the prosthesis are forced apart.

Results: Seven months after the operation there was a leg length discrepancy of 20 mm. The first extension was performed and resulted in 2 mm growth. Anaesthesia was not necessary. X-rays prior to and after the lengthening procedure were taken to demonstrate the increase in length of the endoprosthesis. Six weeks later the second extension of 5 mm was performed successfully. Further extensions of 5 mm will be repeated every one or two months to adjust the discrepancy in length of both legs.

Conclusions: The first clinical experience with a growing endoprosthesis seems to be successful. The patient regained almost normal functioning of his leg. Future extensions will prevent a leg length difference.

845 ORAL

10 YEARS EXPERIENCE OF ADJUVANT RADIATION THERAPY FOR LOCALISED ADULT SOFT TISSUE SARCOMAS

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Between January 1984 and December 1993, 119 adult patients (68 males and 51 females, median age 42.5 years) were treated at our institute for localised sarcoma of extravisceral soft tissue, by maximal conservative surgery followed by adjuvant radiation therapy. 30% had previously undergone surgery and relapsed. Sites affected were the extremities (63.5%), trunk wall (13%), retroperitoneum (9%) and head and neck (4%). Predominant histologies were MFH (27%) and Synovialosarcoma (19%). 85% of tumors were grade 2 or 3. Thirty-seven patients (31%) received chemotherapy. In 75% of the cases, radiation therapy was performed using standard techniques and doses of at least 45 Gy. Bifractionated radiotherapy (dose 45 Gy) was used for patients treated between 1989 and 1992 (25%).

Treatment evaluation was performed on 1st March, 1995. Median follow-up is 66 months. 24% of the patients relapsed locally, and 47%